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RAISING THE LEVEL OF SOVIET GRAIN INDUSTRY

T. Koval'

Introduction

Before the Revolution there were 367.2 million hectares of agricultural land in Russia. Of that total the peasantry worked only 214.7 million hectares, of which more than 80 million hectares were owned by kulaks. Estate owners, monasteries, and members of the Tsar's family owned 152.5 million hectares. Some 28,000 large estate owners together owned as much land as did 10 million peasants. Millions of small farms consisted of not more than one or two desyatinas each.

After the Civil War, agriculture as a whole was at a very low level. In 1923, the sown area under grain crops consisted of only 78.6 million hectares, as compared with 94.4 million hectares in 1913. At the beginning of the reconstruction period the production of wheat had decreased by 62 percent as compared with the prewar period, that of barley by 64 percent and oats by 52 percent. The number of draft animals had decreased by 35 percent. At the end of the reconstruction period, grain yields had reached prewar levels -- 7.5 quintals per hectare. By 1928, the gross output of grain had reached the prewar level -- 5 billion pud.

However, production of commercial grain increased slowly. This constituted a serious obstacle to the further growth of industry, cities, and the production of industrial crops. As a result of the lag in production in relation to the growth in the demand for grain, bread shortages developed.

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Up to World War I Russia had 15 to 16 million individual peasant farms. At the end of the reconstruction period there were 24 to 25 million. The basic agricultural unit during that period was the small peasant farm which produced a minimum of commercial grain. However, the newly created sovkhozes and kolkhozes began producing commercial grain crops to the extent of 47.2 percent of their entire production. During the same period small and medium-size peasant farms produced commercial grain amounting to only 11.2 percent of their total production.

Commercial grain production in 1927 - 1928 reached 630 million puds as against 1,300,600,000 pud before World War I. In addition, sown areas and yields of grain crops on the whole reached prewar levels in 1927. The gross grain harvest on the eve of the Great Patriotic War reached 7 billion pud, and commercial grain production in 1940 was almost twice as large as in 1913. Together with the increase in grain production, there was a considerable increase in livestock production in sovkhozes and kolkhozes. In addition, with the increase in grain production and the spread of grass sowing, the necessary fodder base for the development of the livestock industry was established.

Agriculture in areas occupied by the Germans during 1941 - 1945 sustained particularly heavy losses. All this resulted in a decrease in sown areas, a lowered level of agricultural techniques and mechanization, and a reduction in the productivity and yield of agricultural production. Since the war, collective farmers have been successfully reconstructing agriculture. The serious drought of 1946 notwithstanding -- a drought which in its scope and effect surpassed the widespread drought of 1921 and which spread over a considerable portion of the main Soviet agricultural areas -- the gross harvest and production of commercial grain in 1946 compared favorably with 1921.

Sown Areas

Based on data for 1 May 1937 the over-all quantity of agricultural land, as compared with 1913, increased to 421.9 million hectares, of which 370.8 million hectares were assigned to kolkhozes and 51.5 million hectares to sovkhozes. At the beginning of 1938, the average agricultural area per kolkhoz was 1,529 hectares (not including land areas utilized by kolkhozes on a temporary basis), or an average of 20 hectares of land per peasant household.

The extent and composition of sown areas in the USSR compared to 1913 can be seen in Table 1:

Table 1. Size and Composition of Sown Areas by Basic Crop Groups
(in millions of hectares and in %)

	1913		1928		1933		1938	
	Millions of Hectares	Percent	Millions of Hectares	Percent	Millions of Hectares	Percent	Millions of Hectares	Percent
Total sown area	105.0	100.0	112.9	100.0	129.7	100.0	136.9	100.0
Grain crops	94.4	89.8	92.2	81.5	101.5	78.3	102.4	74.7
Industrial crops	4.5	4.3	8.6	7.6	12.0	9.3	11.0	8.0
Vegetables, cucurbits, potatoes	3.8	3.6	7.7	6.7	8.6	6.6	9.4	6.8
Fodder crops	2.1	1.9	3.9	3.4	7.3	5.6	14.1	10.2
Perennial grasses	1.4	1.3	2.2	2.0	2.6	2.0	7.1	5.2

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As can be seen, the total sown area at the beginning of the First Five-Year Plan already exceeded the 1913 sown area by 8 million hectares. Significant changes have also taken place in the relative proportions of individual crop groups. The percentage of areas under grain cultivation has decreased.

Table 2. Comparison of Data for 1940 and 1913

	1913		1940		
	Millions of Hectares	Percent of Total Sown Area	Millions of Hectares	Percent of Total Sown Area	1940 Compared to 1913 (%)
Total sown area	105.0	100.0	150.4	100.0	143
Grain	94.4	89.8	110.4	73.2	117
Winter wheat	7.3	6.9	14.2	8.5	194
Spring wheat	24.3	23.1	25.9	17.2	106
Industrial crops	4.5	4.3	11.7	7.8	259
Vegetables, cucurbits, potatoes	3.8	3.6	9.9	6.6	261
All fodder crops	2.1	1.9	18.0	12.0	881
Harvested area of perennial grasses	1.4	1.3	10.9	7.2	752

It can be seen from Table 2 that compared to 1913, the sown area in 1940 increased with regard to all crops, and in particular with regard to winter wheat, industrial crops, vegetables, cucurbits, potatoes, and fodder. The shift in the composition of sown areas toward a heavier emphasis on industrial, vegetable, cucurbits, and especially fodder crops created the necessary conditions for crop rotation and the over-all improvement of agricultural practices.

The following program for increasing the sown areas and developing the agrarian economy of our country has been established by the postwar Five-Year Plan:

Table 3. Sown Areas Within Present Boundaries of USSR Based On Crop Groups in 1950
(in millions of hectares and in %)

	Millions of Hectares 1950	Percent
Total sown area	158.6	100.0
Grain crops	105.7	66.6
Industrial crops	11.9	7.5
Vegetables, cucurbits, potatoes	12.6	8.0
Fodder crops	28.4	17.9
Perennial grasses sown in previous years	21.4	13.5

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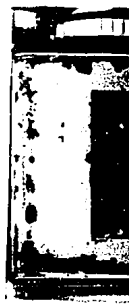

Based on the Fourth Five-Year Plan the sown area will be increased by 8.2 million hectares, as compared with 1940. A slight decrease in the sown area of grain crops in 1950, as against 1940, is explained by the necessity for the introduction of correct crop rotation, leaving considerable areas of the grain regions under black or clean fallow -- this being an effective means of cleaning the fields of weeds -- thus achieving further increases in yield of grains and other crops. The postwar Five-Year Plan envisages a sizeable increase in the sown area of fodder crops and especially of perennial grasses. At the end of the 5-year period the total area sown to fodder crops will increase to 28.4 million hectares, compared to 18.1 million hectares in 1940. The share of the total area sown to fodder crops will increase from 12 percent in 1940 to 17.9 percent in 1950. The perennial grass areas will increase from 10.9 million hectares in 1940 to 21.4 million hectares at the end of the 5-year period. Their share of the over-all area will increase to 13.5 percent as against 7.2 percent in 1940.

The Council of Ministers USSR in its resolution of 26 December 1946, laid down a concrete program for the continued development of the grain industry in the East. Based on this resolution, in 1947 to 1949 sown areas on kolkhozes and grain sovkhozes must be increased by 8 million hectares over 1946, of which grain crops will be increased by 6.5 million hectares and spring wheat by 5.5 million hectares. This applies to the following areas: the northern regions of Kazakh SSR, Bashkir ASSR, Altay and Krasnoyarsk krays, and Kemerovo, Novosibirsk, Omsk, Tomsk, Tyumen, Kurgana, Chelyabinsk, and Chkalov oblasts.

The February 1947 plenary session of the TsK VKP(b) stressed the necessity for the fulfillment of the goal established by the Five-Year Plan: a gross grain harvest of 127 million tons in 1950.

The resolutions of the plenary session present a detailed program based on the law of the Five-Year Plan for the rapid rehabilitation and further development of the grain industry. The resolutions state: "The prewar level of the grain industry must be reached in the next 3 years -- 1947, 1948, and 1949 -- and must be considerably surpassed at the end of the Five-Year Plan." The plenary session points to the necessity for increasing wheat production as a basic food crop. The plenary session has earmarked the following regions in which, during 1949, the prewar level of winter wheat production and its yield must be significantly increased: Ukrainian SSR, Krasnodar and Stavropol' krays, Rostov, Crimea, Voronezh, and Kursk oblasts, and Moldavian SSR. In the remaining winter wheat regions, an increase in yield and gross harvest must also be achieved, especially in the lower Volga regions, Uzbek and Tadzhik SSR, the southern oblasts of Kazakh SSR and in Kirgiz and Azerbaydzhan SSR.

The plenary session has suggested that sown areas of spring wheat be increased by 1,824,000 hectares in kolkhozes of the eastern regions (Siberia, the Urals, and the northeastern oblasts of the Kazakh SSR), to bring the total in 1947 to 7.9 million hectares, in 1948 to 9.4 million hectares, and in 1949 to 11.4 million hectares.

In the lower Volga regions (Kuybyshev, Saratov, Stalingrad, and Ul'yanov oblasts) measures must be taken to expand sown areas of spring wheat, especially the hard wheat varieties, also utilizing formerly unused lands for that purpose. The sowing of spring wheat on kolkhozes of these oblasts must be increased by 300,000 hectares and must reach 2.4 million hectares in 1947 and 3 million hectares in 1948.

On kolkhozes of the chernozem belt, the sowing of spring wheat must be increased by 200,000 hectares and must reach 1.6 million hectares in 1947 and 1.8 million hectares in 1948.

The plenary session discussed the serious lag in production of spring wheat in the Ukrainian SSR. The resolution goes on to say: "It is inadmissible that a food crop as valuable as spring wheat is being given less and less attention every year in kolkhozes and sovkhozes of the Ukrainian SSR, and that fertile black soil is being used for less valuable fodder crops, particularly barley."

The plenary session decided to increase the sown area of spring wheat on kolkhozes of the Ukraine, for 1947 as compared with 1946, by 182,000 hectares a total of 750,000 hectares, and to insure the further expansion of spring wheat sowing for future years. The resolution also stresses the importance of taking steps to increase production of winter rye in regions other than the chernozem belt, in the central chernozem oblasts, the northern oblasts of the Ukraine, on the right bank of the Volga, and in other regions of the country.

The February Plenary Session of the TsK VKP(b) particularly stressed the unsatisfactory situation with regard to the production of pulses, primarily in such oblasts as Penza, Stalingrad, Ul'yanov, Ryazan', as well as in the Tatar, Bashkir, and Mordva ASSR and Ukrainian SSR, and suggests that the sown area of pulses in kolkhozes be increased by 300,000 hectares and be raised to 1.3 million hectares in 1947 and to 1.6 million hectares in 1948. At the same time, a considerable increase is suggested in the yield of pulses with special attention to increased sowings of peas, particularly in the central and eastern regions of the Soviet Union. An increase is also planned in the sown areas and yield of beans and lentils, particularly table lentils in the central chernozem oblasts, in the lower Volga regions, and the wooded areas of Ukrainian SSR.

Considering the great significance of maize as an industrial and food crop as well as the possibility of obtaining high and stable yields, the plenary session proposed to increase the area sown to maize on Soviet kolkhozes 280,000 hectares in 1947, and to bring the total to 2,260,000 hectares, and in 1948 to 2,700,000 hectares, as well as to increase considerably the yield of maize. To fulfill successfully such an ambitious plan for the increase of maize production in coming years, mechanization of sowing and harvesting of maize must be intensified. To raise the yield of maize, it is necessary in the next few years to sow considerable amounts of hybrid seeds, for which purpose the Ministry of Agriculture and the Ministry of State Farms must organize the production of hybrid maize seeds on seed-producing sovkhozes and kolkhozes.

Comrade Andreyev, in his report to the plenary session, pointed to certain conservative elements among some agricultural organs, which have hindered the growth of the maize industry in new regions. Maize is assumed to be an exclusively southern crop; however, it has been proven that it can be grown in areas considerably north of the lower Volga area, in the central chernozem region, and even in the southern Siberian steppes.

The resolutions of the plenary session envisage a considerable expansion in sown areas and an increase in the gross harvest of the more important food crops. Kolkhozes are to increase the sown area of buckwheat by 420,000 hectares to reach 1.5 million hectares in 1947, and 1.7 million hectares in 1948. This expansion in sown area of buckwheat, plus emphasis on raising its yield, applies primarily to Kursk, Orlov, Bryansk, and Tula oblasts, and Tata ASSR, which previously played an important part in buckwheat production, but which in recent years had considerably reduced that production.

Millet is another important food crop. In the USSR, millet grows under the most varied climatic conditions, and under good technical methods, gives a higher and more stable yield than other grain crops. Most millet is produced in the southern and southeastern regions. The plenary session intructed the Ministry of Agriculture and the Ministry of State Farms to guarantee an average millet yield of 15 quintals per hectare on kolkhozes and sovkhozes on an area of 1 million hectares in 1947. The plenary session also envisaged an increase in the sown area of rice on kolkhozes of 15,000 hectares, raising it to a total of 150,000 hectares in 1947 and 160,000 hectares in 1948.

Grain Harvest and Yields

Data indicating increase in sown area are not sufficient to permit judgment of the development of agriculture.

During the First Five-Year Plan the gross output of grain crops underwent considerable changes, and the lowest level of production of grain was reached in the years 1931 - 1932. In 1933, a sizable increase in grain production was noted. That year produced an increase in the gross production of grain crops as compared with 1932 by 199.3 million quintals, and 97 million quintals more than in 1913. In 1933, fundamental changes in the commercial grain economy took place in the sources of delivery of industrial grains to the state. While in 1929 - 1930 individual farms supplied the government nearly 780 million pud, and kolkhozes not more than 120 million pud of grains, during the following period kolkhozes and individual farms traded places: in 1933, kolkhozes supplied the government with more than one billion pud of grain, whereas individual farms, even with 100 percent fulfillment of the plan, delivered only 130 million pud. As a result of the unification of small and scattered individual farms into large collective farms, the USSR was able in 1933 to process a total of 1.2 to 1.4 billion pud of grain instead of the 500 to 600 million pud of industrial grains which were being processed during the period of individual farms.

During succeeding Five-Year Plans the gross output of grain crops continued to increase. During the Second Five-Year Plan, despite a drought in the eastern and southeastern region of the USSR in 1936 and 1938, the average annual gross production of grain crops increased to 955 million quintals, or by 19.2 percent as compared to 1913, and by 186.2 million quintals or 24.2 percent compared to the average annual yield during the First Five-Year Plan.

The most important objective of the postwar Five-Year Plan in the development of the grain economy is to increase grain production in 1950 to 127 million tons, and the yield of grain crops is expected to reach 12 quintals per hectare.

The drought of 1946 in a number of the most important agricultural regions proved that the establishment of a system of measures by means of which disasters can be predicted is one of the objectives facing Soviet agriculture which cannot be postponed. The drought of 1946 was the most disastrous one in the last 50 years, both in scope and in the number of days without rainfall. In the Kamennaya steppe (Voronezh Oblast) the 1946 drought exceeded the droughts of 1891, 1897, and 1921 in intensity and duration. During May and June 1946, the average rainfall was half that of the years 1891 and 1921.

Table 4. Yield of Grain Crops
(annual average in quintals per hectare)

	First Five-Year Plan	Second Five-Year Plan	Growth (%)
All grain crops	7.5	9.1	121.3
Winter wheat	8.6	10.9	126.7
Spring wheat	6.1	8.0	131.1
Winter rye	8.2	9.6	117.0
Oats	8.2	9.9	120.7
Spring barley	8.2	10.0	121.9

It is a known fact that when the same type of crops are sown repeatedly, certain elements of the soil are depleted. For example, in the case of rye, there is a depletion of phosphoric acid; in the case of potatoes, potassium oxide, etc. Depletion of nitrogen in the soil is particularly disasterous. That is why the most important crops used in crops rotation are nitrogen-gathering plants of the leguminous variety, particularly clover (for the north and central belt), alfalfa, and esparsette (for the southern regions).

In view of the exceptional importance of crop rotation to increased yields' the February 1947 plenary session of the TsK VKP(b) made it incumbent upon all party and Soviet organs, the Ministry of Agriculture, and the Ministry of State Farms to complete, in the course of the postwar Five-Year Plan, the introduction of proper crop rotation methods. Such methods include the sowing of grass and wide utilization at leguminous and cereal perennial grasses.

The decisions of the plenary session stipulated that in the steppe areas of the USSR, crop rotation will be introduced utilizing grass sowing and black fallow land. In areas of sufficient rainfall, and especially in the non-chernozem belt, it is necessary to resort to cropped fallow for the purpose of more complete utilization of the land. In the regions of Siberia, the Urals, and the northeast oblasts of the Kazakh SSR, utilization of virgin lands must be effected by sowing spring wheat, and in the steppe regions all clean fallow areas must be utilized.

The February plenary session, in accordance with the objectives of the postwar Five-Year Plan, decided to increase the cutting area of perennial grasses in 1948 to the prewar level to bring it up to a total of 21.4 million hectares, including 15.3 million hectares in kolkhozes by 1950.

The tasks assigned by the Council of Ministers USSR with regard to agriculture in 1947 envisage an increase of sown areas by 10 million hectares, of which kolkhozes will account for 8.7 million hectares. Simultaneously with this considerable expansion of sown areas, the average yield increase of grain crops for the whole territory of the USSR was set at 26 percent. The amount of tractor work by MTS was set at 165 million hectares which considerably exceeds the volume of tractor work carried out in 1946.

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The Gosplan USSR bulletin of 8 July 1947, "Fulfillment Totals of the State Plan for Reconstruction and Development of the National Economy of the USSR for the Second Quarter 1947," states that the plan for the summer sowing of grain crops has been fulfilled. As compared with 1946, the increased sown area of the 1947 harvest for all agricultural crops will be nearly a million hectares.

Mechanization of Grain Industry

Mechanization of agriculture reached particularly high proportions during the Second Five-Year Plan. The agricultural tractor fleet of the USSR increased to 483,500 in 1938 as against 34,900 in 1929, and its capacity increased to 9,256,200 horsepower as against 391,400 horsepower in 1929.

The fleet of agricultural combines increased from 8,700 in 1930 to 153,500 in 1938, a 17-fold increase. The number of trucks used in agriculture increased from 2,300 in 1930 to 195,800 in 1938. The number of MTS increased from 2,900 in 1934 to 6,350 in 1938.

During the postwar Five-Year Plan 4.5 billion rubles (based on unchanged 1926 - 1927 prices) will be made available for agricultural machinery as against 1.9 billion rubles during the Second Five-Year Plan, which was the period when the highest level of tractor and agricultural machinery production was reached.

In accordance with the objectives of the postwar Five-Year Plan, the prewar mechanization level of agricultural work must be fully reestablished during the next few years so that by 1950 the mechanization level, in terms of summer and winter sowing, will reach not less than 70 percent (as against 59 percent in 1940); harvesting grain crops with combines, 55 percent (as against 43 per cent in 1940); plowing fallow land, 90 percent (as against 82 percent in 1940); and plowing winter fallow land, 90 percent (as against 71 percent in 1940).

The decisions of the plenary session stipulate that in 1947 the Ministry of Agricultural Machine Building must provide agriculture with 30,300 tractors as well as with 510 million rubles worth of other agricultural machinery. Simultaneously, in 1947 the Ministry of Transportation Machine Building must insure delivery to agriculture of 3,800 C-80 caterpillar tractors, while a number of other ministries must insure delivery of 36,750,000 rubles worth of agricultural machinery.

From the Gosplan USSR bulletin, "Fulfillment Totals of the State Plan for Reconstruction and Development of the National Economy of the USSR for the Second Quarter 1947," it may be seen that the production plan for the second quarter of 1947 has been fulfilled 99.7 percent by the Ministry of Agricultural Machine Building.

An even more ambitious program for the production of tractors and agricultural machinery is planned for 1948. Of a total tractor production for 1948 of 75,500, agriculture will be assigned 67,000 tractors as well as 80,000 tractor plows, 25,000 combines, 62,000 horse-drawn reaping machines, 114,000 horse-drawn mowing machines, 90,000 rakes, etc.

In addition, a considerable increase is planned in the production of spare parts for tractors and agricultural machinery, especially those parts which are very scarce. The February plenary session established a new system for equipping new tractors and combines with spare parts. Each new tractor and combine must be equipped by the producing plant with a complete kit of spare parts, tools, and maintenance instructions.

For every ten tractors and combines produced, the plant must supply a spare-parts kit for current repairs. For every 50 tractors and combines produced, the plant must provide a complete set of spare parts for major overhauls.

Soviet engineers have recently completed the self-propelled Soviet S-4 combine. The self-propelled S-4 combine is equipped with tires and weighs a total of 3,400 kilograms as against the 5,300-kilogram Stalinets combine and the 4,300-kilogram Kommunar combine. The steering of the S-4 combine is greatly simplified. The productivity per hour of the S-4 is 2.1 hectares which is 1½ times the productivity of the Kommunar combine.

The government decisions of 28 December 1946 also provide for the production of the Stalinets-6 trailer combine, which is a combination of the Stalinets-1 thresher and the header of the Kommunar combine. This hook-up makes it possible to combine the high capacity of the thresher and the wide range of the header. The Stalinets-6 trailer combine is efficient in harvesting high-yield grains and reduces the grain loss in the thresher by three to four times as compared to the Kommunar combine.

The plenary session stressed in particular that the production plans of MTS and tractor brigades are considered fulfilled only if all conditions of the tractor work plans are fulfilled in their basic components: spring plowing, preparation of the land for sowing, spring sowing, utilization of fallow land, cultivation of crops, harvesting, winter sowing, plowing of fallow land, all within assigned time limits and within the plan for payment in kind. This decision of the plenary session put an end to the existing practice of evaluating the work of MTS only in accordance with the fulfillment of the plan for soft-tillage tractor work, which resulted in part of the MTS trying to fulfill the plan of tractor work at the expense of all manner of light operations -- such as harrowing etc.

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